EXHIBIT E

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Tiles, badges, and notifications (Windows Runtime apps)

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The topics in this section discuss the concepts and terminologies that you'll need to be familiar with before you begin designing tiles (including secondary tiles and lock screen apps), badges, and toast notifications, and start updating those items through further notifications.

Tiles are the representation of your app on the Start screen. Selecting a tile launches its app. The content shown on your tile can, and ideally should, change regularly, especially if your tile can communicate new, real-time information to your user. Tiles can show a combination of text and images, and a badge to show status.

Secondary tiles enable users to promote specific content and deep links—a reference to a specific location inside the pinning app—from Windows Store app apps onto the Start screen. Secondary tiles enable users to personalize their Start screen experience with friends, news sources, stock quotes, and other items important to them.

Toast notifications enable your app to send a message to the user through a pop-up notification that appears in the upper-right corner of your screen (upper-left corner for right-to-left languages). Toast notifications are designed to be used when your app is not on the screen—when the user is in another app or on the desktop.

The lock screen is displayed when you lock your device. Apps can show a text-only version of their tiles on the lock screen to continue to send updates to the user.

Tiles, secondary tiles, lock screen tiles, and toast can be updated through several types of notifications:

- Locally while the app is running.
- Polling notifications, which are periodic updates pulled from a web server (tiles, secondary tiles, and lock screen tiles only).
- Push notifications, which are updates from a cloud server.

Conceptual topics

See the following topics to learn about the concepts you'll need:

Topic	Description
Tile and tile notification overview	This topic discusses the concepts and terminology surrounding app tiles, which are the Start screen tiles that represent and launch your app.
Badge overview	A notification badge conveys summary or status information specific to your app. They can be numeric (1-99) or one of a set of system-provided glyphs.
Secondary tiles overview	Secondary tiles enable users to promote specific content and deep links—a reference to a specific location inside the pinning app—from Windows Store app apps onto the Start screen. Secondary tiles enable users to personalize their Start screen experience with friends, news sources, stock quotes, and other items important to them.
Toast notification overview	This topic discusses the concepts and terminology surrounding toast notifications, which are pop-up notifications used to allow the app to communicate with the user whether the user is in another app, on the Start screen, or on the desktop.
Tile and toast visual assets	This topic discusses the size requirements for image file assets used on tiles and toasts.
Globalization and accessibility for tile and toast notifications	This topic discusses the steps that you should take to globalize your tile and toast notifications through localization, scaling, and accessibility. We discuss the protocols by which you reference text and images that are either part of your app's package or saved to local storage, the avenues by which you address different languages and cultures, ease of access settings, and the sizing of your images on different devices.
Lock screen overview	This topic discusses the concepts and terminology for an app's presence on the lock screen. The lock screen is shown when you lock your device, as well as when you reboot the device or wake it from a sleep state. It is a user-customizable surface that both conveys information and protects the computer against unauthorized use.
Sending notifications	This section discusses the concepts and architecture involved in push notifications, scheduled notifications, polling notifications, local notifications, and how to choose the notification method that is best for your app.

Instructional topics

The topics listed above discuss concepts: the "what" rather than the "how". If you are already familiar with these concepts and are looking for tutorial material on programming for these elements and notifications, see the topics in the Working with tiles, badges, and toast notifications section.

Reference topics

If you are looking for reference documentation about the APIs involved in programming these elements and notifications, see the following:

- Windows.UI.Notifications, for the creation and sending of badge, tile, and toast notifications as well as scheduled notifications.
- Windows.Networking.PushNotifications, for push notifications and raw notifications.
- Windows.UI.StartScreen, for secondary tiles.
- Windows.ApplicationModel.Background, for the lock screen.

Samples

See the Dev Center for full, downloadable samples, available in a variety of programming languages, that illustrate the use of the APIs.

- App tiles and badges sample
- Secondary Tiles sample
- Toast notifications sample
- Push and periodic notifications sample
- Lock screen app sample
- Raw push notifications sample
- Scheduled notifications sample

If you'd like to try working with tiles and notifications and other key Windows 8 features, download the hands-on labs for Windows 8. These labs provide a modular, step-by-step introduction to creating a sample Windows Store app in the programming language of your choice (JavaScript and HTML or C# and XAML).

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